MEMS Full & Dual Full 2x2 PM Fiber Optic Switch

(Protected by U.S. pending patent)

Product Description

The MEMS Series Full and Dual Full 2x2 PM Fiberoptic switch connects optical channels by redirecting incoming optical signals into selected output fibers. This is achieved using a patent pending MEMS configuration and activated via an electrical control signal. It uniquely features rugged thermal activated micro-mirror movement instead of rotation.

This novel design significantly reduces packaging requirement and simplifies driving electronics, offering unprecedented high stability as well as an unmatched low cost.

Performance Specifications

<table>
<thead>
<tr>
<th>MEMS Full &amp; Dual Full 2x2 PM Switch</th>
<th>Min</th>
<th>Typical</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation Wavelength</td>
<td>850, 980, 1060, 1310, 1550 nm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insertion Loss [1]</td>
<td>0.6</td>
<td>1.0</td>
<td>dB</td>
<td></td>
</tr>
<tr>
<td>Extinction Ratio</td>
<td>18</td>
<td>23</td>
<td>dB</td>
<td></td>
</tr>
<tr>
<td>Return Loss [1]</td>
<td>50</td>
<td>dB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross Talk [1]</td>
<td>50</td>
<td>dB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switching Time</td>
<td>20</td>
<td>ms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repeatability</td>
<td>±0.05</td>
<td>dB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repetition Rate</td>
<td>20</td>
<td>Hz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Durability</td>
<td>$10^9$</td>
<td>Cycle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switching Type</td>
<td>Non-Latching</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-5</td>
<td>70 °C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40</td>
<td>85 °C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optical Power Handling</td>
<td>300</td>
<td>mW</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fiber Type</td>
<td>Panda PM 250 fiber [2]</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[1]. Exclude connectors.
[2]. Please contact us for other fiber type.
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**Mechanical Dimensions (Unit: mm)**

MEMS Full 2x2 PM Switch

MEMS Dual Full 2x2 PM Switch

**Electronic Control Requirements**

<table>
<thead>
<tr>
<th>Optical Path</th>
<th>Full 2x2 PM (Function I)</th>
<th>Dual 2x2 PM (Function II)</th>
<th>Pin 1</th>
<th>Pin 2</th>
<th>Pin 3</th>
<th>Pin 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 → 1’, 4 → 4’</td>
<td>1 → 1’, 2 → 2’, 3 → 3’, 4 → 4’</td>
<td>1 → 4’, 4 → 1’, 2 → 2’, 3 → 3’</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>NC</td>
</tr>
<tr>
<td>1 → 4’, 4 → 1’</td>
<td>1 → 1’, 2 → 2’, 3 → 3’, 4 → 4’</td>
<td>1 → 4’, 4 → 1’, 2 → 2’, 3 → 3’</td>
<td>+V</td>
<td>0</td>
<td>0</td>
<td>NC</td>
</tr>
</tbody>
</table>

[1]. +V: 4~5 VDC. Typical is 4.5 VDC.  
[3]. Power Consumption in max is about 170 mW for full-2x2, and 340mW for dual-2x2.
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**Functional Diagram**

<table>
<thead>
<tr>
<th>Type</th>
<th>Wavelength</th>
<th>Switch</th>
<th>Package</th>
<th>Fiber Type</th>
<th>Fiber Length</th>
<th>Connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEDP</td>
<td>2x2=22</td>
<td>1060=1</td>
<td>Standard</td>
<td>PM 400=400</td>
<td>0.25m=1</td>
<td>None=1</td>
</tr>
<tr>
<td></td>
<td>Special=00</td>
<td>1310=3</td>
<td>Non-Latching</td>
<td>Special=0</td>
<td>0.5m=2</td>
<td>FC/PC=2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1410=4</td>
<td></td>
<td>Special=0</td>
<td>1.0m=3</td>
<td>FC/APC=3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1550=5</td>
<td></td>
<td>Special=0</td>
<td>Special=0</td>
<td>SC/PC=4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>780=7</td>
<td></td>
<td>Special=0</td>
<td>Special=0</td>
<td>ST/PC=5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>850=8</td>
<td></td>
<td>Special=0</td>
<td>Special=0</td>
<td>LC=7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>980=9</td>
<td></td>
<td>Special=0</td>
<td>Special=0</td>
<td>Duplex=8</td>
</tr>
</tbody>
</table>

[1]. MEDP: MEMS Full 2x2 PM Switch.
[2]. MEPM: MEMS Full 2x2 PM Switch.